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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,297	02/15/2005	James S. Im	A35413-PCT-USA (070050.27)	6004
21003 7590 08/09/2007 BAKER BOTTS L.L.P. 30 ROCKEFELLER PLAZA 44TH FLOOR NEW YORK, NY 10112-4498			EXAMINER AU, BAC H	
			ART UNIT 2822	PAPER NUMBER
			MAIL DATE 08/09/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary	Application No.	Applicant(s)	
	10/525,297	IM, JAMES S.	
	Examiner	Art Unit	
	Bac H. Au	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 17-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/15/05;10/18/05;6/6/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-16 in the reply filed on April 30, 2007, is acknowledged. The traversal is on the ground(s) that a special technical feature does exist between Groups I, II, and III; the special technical feature comprising crystallization of a thin film using laser irradiation, providing crystallized regions composed of a first and a second area, wherein the first area contains a first set of grains, and the second area contains a second set of grains, and wherein at least one characteristic of the second set of grains is different from at least one characteristic of the first set of grains. This is not found persuasive as this element cannot be a special technical feature under PCT Rule 13.2 because the element is shown in the prior art. Ito (U.S. Pub. 2002/0104750) discloses, in Fig.23, crystallization of a thin film using laser irradiation, providing crystallized regions composed of a first and a second area, wherein the first area contains a first set of grains, and the second area contains a second set of grains, and wherein at least one characteristic of the second set of grains is different from at least one characteristic of the first set of grains.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugano (U.S. Pub. 2002/0096680) in view of Ito (U.S. Pub.2002/0104750) and Maegawa (U.S. Pat. 5591668).

Regarding claim 1, Sugano [Figs.1-7] discloses a method for processing a thin film sample, comprising the steps of:

(a) controlling a beam generator [51] to emit at least one beam pulse;

(b) masking the at least one beam pulse to produce at least one masked beam pulse, wherein the at least one masked beam pulse is used to irradiate at least one portion [RGN] of the thin film sample;

(c) with the at least one masked beam pulse, irradiating the at least one portion of the film sample with sufficient intensity for the at least one portion to later crystallize [Paras.11,59]; and

(d) allowing the at least one portion [RGN] of the film sample to crystallize, the crystallized at least one portion being composed of a first area [Edge portion] and a second area [Center portion],

wherein the first area surrounds the second area, and is configured to allow an active region of an electronic device to be provided at a distance therefrom [Paras.11-13,59].

Sugano discloses an irradiated and crystallized region [RGN], which would obviously include an edge region and a center region, but fails to explicitly disclose wherein, upon the crystallization thereof, the first area includes a first set of grains, and

the second area includes a second set of grains whose at least one characteristic is different from at least one characteristic of the first set of grains.

However, Ito [Fig.23] and Maegawa [Figs.1A-B] disclose a method for processing a thin film sample, wherein, upon the crystallization thereof, the first area [Edge portion] includes a first set of grains, and the second area [Center portion] includes a second set of grains whose at least one characteristic is different from at least one characteristic of the first set of grains.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Ito and Maegawa into the method of Sugano. The ordinary artisan would have been motivated to modify Sugano in the manner set forth above for at least the purpose of facilitating the provision of the edge and center portions of the irradiated region [RGN] as disclosed by Sugano.

Regarding claims 2-3, Sugano [Paras.90-93; Figs.21-23] discloses

wherein the masked beam pulse has the intensity to completely melt the at least one portion of the thin film sample throughout its thickness;

wherein the masked beam pulse has the intensity to partially melt the at least one portion of the thin film sample.

Regarding claims 4-12, and 15-16, Sugano discloses

wherein the active region of the TFT is situated within the second area [Paras.11-13,59];

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wherein the second area corresponds to at least one pixel [Paras.11-13,59];

wherein the second area has a cross-section for facilitating thereon all portions of the TFT [Paras.11-13,59];

wherein a size and a position of the first area with respect to the second area are provided such that the first area provides either no effect or a negligible effect on a performance of the TFT [Paras.11-13,59];

further comprising the step of: (e) after step (d), determining a location of the first area so as to avoid a placement of the active region of the TFT thereon [Paras.11-13,59];

wherein the at least one beam pulse includes a plurality of beamlets, and wherein the first and second areas are irradiated by the beamlets [Paras.11-13,59-62];

wherein the thin film sample is a silicon thin film sample [Paras.11-13,59];

wherein the thin film sample is composed of at least one of silicon and germanium [Paras.11-13,59];

wherein the thin film sample has a thickness approximately between 100Å and 10,000Å [Para.65 lines 13-16];

wherein the electronic device is a thin-film transistor ("TFT") [Paras.11-13,59];

wherein the thin film sample is a semiconductor thin film sample [Paras.11-13,59].

Regarding claims 13-14, Sugano does not explicitly disclose wherein the first set of grains provided in the first area are laterally-grown grains; and wherein the laterally-

grown grains of the first area are equiaxed grains. However, it would be obvious that the first set of grains provided in the first area, boundary or edge portion, are laterally-grown grains; and wherein the laterally-grown grains of the first area are equiaxed grains. This is because lateral crystal growth occurs at the liquid/solid boundary region and propagates perpendicular to the boundary. It would also be obvious that the laterally-grown grains of the first area are equiaxed grains, as the crystallization process of the melted region would proceed similarly to that of the claimed invention. The lateral grain growth effect is disclosed in the Experiments section, on p.2, of Jeon et al., "Two-step laser recrystallization of poly-Si for effective control of grain boundaries".

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bac H. Au whose telephone number is 571-272-8795. The examiner can normally be reached on Mon-Fri 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BHA

Zandra V. Smith
Zandra V. Smith
Supervisory Patent Examiner
1 Aug 2007